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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,083	08/21/2001	James A. Crawford	70647	8554
22242	7590	02/18/2005	EXAMINER	
FITCH EVEN TABIN AND FLANNERY 120 SOUTH LA SALLE STREET SUITE 1600 CHICAGO, IL 60603-3406			PHU, PHUONG M	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/935,083

Applicant(s)

CRAWFORD, JAMES A.

Examiner

Phuong Phu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/10/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitations “the first closed loop tracking bandwidth”, “the nominal closed loop tracking bandwidth”. These limitations are lack of antecedent basis.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (20030053564).

-Regarding to claims 1 and 7, see figures 2, 3 and 5, and sections [0034]-[0044], [0064]-[0070], Kim et al discloses a tracking method and associated system (see figure 3) comprising:

adjusting step/means (44) of adjusting a width of a closed loop tracking bandwidth of a pilot phase tracking loop while receiving OFDM data symbols to minimize frequency/phase errors (58, 56) of VCO's (see sections [0065-0066]).

Kim et al does not disclose whether the frequency/phase errors are resulted from frequency pushing and frequency pulling in an OFDM transceiver.

However, Kim et al discloses that the method is used in an OFDM transceiver. Therefore, for an application of usage, it would have been obvious for one skilled in the art to applied Kim et al tracking method in an OFDM transceiver which appears under frequency pushing and frequency pulling problems causing frequency/phase errors for VCO's in the receiver of the OFDM transceiver to minimize the frequency/phase errors because the Kim et al tracking method can inherently minimize frequency/phase errors which are resulted from frequency pushing and frequency pulling problems or from other causes.

-Regarding to claims 2 and 8, Kim et al discloses that the adjusting comprises operating the pilot tracking loop at a first closed loop tracking bandwidth that is wider than a nominal closed loop tracking bandwidth when tracking one or more OFDM data symbols which can be at the beginning of a data portion of an OFDM MAC frame (see sections [006] and [0065].

-Regarding to claims 3 and 9, the adjusting further comprises reducing the closed loop tracking bandwidth of the pilot tracking loop from the first closed loop tracking bandwidth to the nominal closed loop tracking bandwidth when tracking OFDM data symbols subsequent to the one or more OFDM data symbols (see section [0066]).

-Regarding to claims 4 and 10, Kim et al does not disclose whether the frequency error between receive and transmit operations in the OFDM transceiver is maintained at less than about 100 Hz. However, Kim et al discloses that the method is to minimize to frequency/phase error between receive and transmit operations in the OFDM transceiver (see section [0037]). It would have been obvious for one skilled in the art, at the time the invention was made, when

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building or carrying out Kim et al invention, within his skills and upon his design preference or system requirement, to implement Kim et al invention such that the frequency error between receive and transmit operations in the OFDM transceiver could be maintained at less than about 100 Hz for the minimization.

-Regarding to claims 5 and 11, Kim et al does not disclose that the frequency error between receive and transmit operations in the OFDM transceiver is minimized in order to support OFDM communications using 64-QAM and higher modulations. However, Kim et al discloses that his method support OFDM communications using a digital phase modulation (see section [0056]). And, on another hand, 64-QAM and higher modulations are well-known digital phase modulations, and the examiner takes Official Notice. Therefore, would have been obvious for one skilled in the art, at the time the invention was made, when building or carrying out Kim et al invention, within his skills and upon his design preference or system requirement, to implement Kim et al invention such that his invention could support OFDM communications using 64-QAM and higher modulations without affecting the overall system performance.

-Regarding to claims 6 and 12, Kim et al does not disclose that the frequency error between receive and transmit operations in the OFDM transceiver is minimized in order to support OFDM communications using QPSK and higher modulations. However, Kim et al discloses that his method support OFDM communications using a digital phase modulation (see section [0056]). And, on another hand, QPSK and higher modulations are well-known digital phase modulations, and the examiner takes Official Notice. It would have been obvious for one skilled in the art, at the time the invention was made, when building or carrying out Kim et al invention, within his skills and upon his design preference or system requirement, to implement

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Kim et al invention such that his invention could support OFDM communications using QPSK and higher modulations without affecting the overall system performance.

-Claim 13 is rejected with similar reasons set forth for claims 1-3.

-Claim 14 is rejected with similar reasons set forth for claim 4.

-Claim 15 is rejected with similar reasons set forth for claim 5.

-Claim 16 is rejected with similar reasons set forth for claim 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (6:30-2:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PHUONG PHU
PRIMARY EXAMINER

Phuong Phu
Primary Examiner
Art Unit 2631

Phuong Phu 1/6/05
Phuong Phu